

IN THE CLAIMS

CLAIM 1 (Currently Amended) A structure comprising:

a polycrystalline material comprising crystallites of polymers with interstitial regions therebetween;

wherein said polymers are selected from the group consisting of a precursor to an electrically conductive polymer and an electrically conductive polymer;

said interstitial regions between said crystallites comprising amorphous material comprising an additive;

said additive provides mobility to said polymer to allow said polymer to associate with one another to achieve said crystallites;

said polycrystalline material is characterized by a degree of crystallinity and a degree of amorphous regions, said degree of polycrystallinity and said degree of amorphous regions are selected by selecting the composition of said additive and the amount of said additive[[]] ; and

wherein said additive is a plasticizer selected from the group consisting of:

Adipic acid derivatives

Azelaic acid derivatives

Benzoic acid derivatives

Citric acid derivatives

Dimer acid derivatives

Epoxy derivatives

Fumaric acid derivatives

Glycerol triacetate

Sebacic acid derivatives

Stearic acid derivatives

Diethyl succinate

N-Ethyl o,p-toluenesulfonamide

o,p-toluenesulfonamide

Terpentines

Terpentine derivatives

Siloxanes

Isobutyrate derivatives

Isophthalic acid derivatives

Lauric acid derivatives

Linoleic acid derivative

Maleic acid derivative

Mellitates

Myristic acid derivatives

Oleic acid derivatives

Palmitic acid derivatives

Paraffin derivatives

Phosphoric acid derivatives

Phthalic acid derivatives

Ricinoleic acid derivatives

Polysiloxanes

Ethylene glycols

Polyethylene glycols

Polyesters

Sucrose derivatives

Tartaric acid derivative

Terephthalic acid derivative

Trimellitic acid derivatives

Glycol derivatives

Glycolates

Hydrogenated terphenyls HB-40

poly(alkyl naphthalene)s Paraflex

aliphatic aromatics Leromoll

chlorinated paraffin (52 wt % Cl).

Ceraclor S-52

Phosphonic acid derivatives

Polysilanes

CLAIM 2 (Original) A structure according to claim 1, wherein said structure is electrically conductive and has an isotropic electrical conductivity.

CLAIM 3 (Previously Presented) A structure according to claim 1, wherein said additive is a plasticizer.

CLAIM 4 (Cancel)

CLAIM 5 (Original) A structure according to claim 1, wherein said polymer is selected from the group consisting of substituted and unsubstituted polyparaphenylene vinylenes, polyparaphenylenes, polyanilines, polythiophenes, polyazines, polyfuranes, polypyrroles, polyselenophenes, poly-p-phenylene sulfides, polyacetylenes formed from

soluble precursors, combinations thereof and blends thereof with other polymers and copolymers of the monomers thereof.

CLAIM 6 (Original) A structure according to claim 1, wherein said structure has crystallinity greater than about 25%.

CLAIM 7 (Currently Amended) A structure comprising:

a polycrystalline material comprising crystallites of polymers with interstitial regions therebetween;

said polymer is selected from the group consisting of a precursors to an electrically conductive polymer and an electrically conductive polymer;

said interstitial regions comprise an amorphous material selected from the group consisting of said polymers;

said amorphous material includes an additive;

said polycrystalline material is characterized by a degree of crystalinity and a degree of amorphous regions, said degree of polycrystallinity and said degree of amorphous regions are selected by selecting the composition of said additive and the amount of said additive[.]; and

wherein said additive is a plasticizer selected from the group consisting of:

Adipic acid derivatives

Azelaic acid derivatives

Benzoic acid derivatives

Citric acid derivatives

Dimer acid derivatives

Sebacic acid derivatives

Stearic acid derivatives

Diethyl succinate

N-Ethyl o,p-toluenesulfonamide

o,p-toluenesulfonamide

Epoxy derivatives

Fumaric acid derivatives

Glycerol triacetate

Isobutyrate derivatives

Isophthalic acid derivatives

Lauric acid derivatives

Linoleic acid derivative

Maleic acid derivative

Mellitates

Myristic acid derivatives

Oleic acid derivatives

Palmitic acid derivatives

Paraffin derivatives

Phosphoric acid derivatives

Phthalic acid derivatives

Ricinoleic acid derivatives

Terpentines

Terpentine derivatives

Siloxanes

Polysiloxanes

Ethylene glycols

Polyethylene glycols

Polyesters

Sucrose derivatives

Tartaric acid derivative

Terephthalic acid derivative

Trimellitic acid derivatives

Glycol derivatives

Glycolates

Hydrogenated terphenyls HB-40

poly(alkyl naphthalene)s Paraflex

aliphatic aromatics Leromoll

chlorinated paraffin (52 wt % Cl),

Ceraclor S-52

Phosphonic acid derivatives

Polysilanes

CLAIM 8 (Original) A structure according to claim 7, wherein said polymer is an electrically conductive polymer and said polycrystalline material has a conductivity which is isotropic.

CLAIM 9 (Original) A structure according to claim 7, wherein said polymer is selected from the group consisting of substituted and unsubstituted polyparaphenylene vinylenes, polythianophenes, polyparaphenylenes, polyanilines, polythiophenes, polyazines, polyfuranes, polypyrroles, polyselenophenes, poly-p-phenylene sulfides, polyacetylenes formed from soluble precursors, combinations thereof and blends thereof with other polymers and copolymers of the monomers thereof.

CLAIM 10 (Cancel)

CLAIM 11 (Original) A structure comprising a polyaniline material having a plurality of crystal grains, said material having isotropic electrical conductivity.

CLAIM 12 (Original) A structure according to claim 1, wherein the amount of said additive is adjustable.

CLAIM 13 (Original) A structure according to claim 12, wherein said amount is controlled to modify physical properties of said structure.

CLAIM 14 (Original) A structure according to claim 13, wherein said physical properties are selected from the group consisting of glass transition temperature, compliance, thermal coefficient of expansion, modulus, yield and tensile strength, hardness, density.

CLAIM 15 (Original) A structure according to claim 1, wherein said crystallites have a size greater than about 80Å.

CLAIM 16 (Original) A structure according to claim 11, wherein said grains are greater than about 80Å.

CLAIM 17 (Original) A structure according to claim 7, wherein said crystallites have a size greater than about 80Å.

CLAIM 18 (Currently Amended) A structure comprising:

a polycrystalline material comprising crystallites of polyaniline with interstitial regions therebetween;

said polyaniline is selected from the group consisting of a precursors to an electrically conductive polyaniline and an electrically conductive polyaniline;

said interstitial regions comprise an amorphous material selected from the group consisting of polyaniline;

said amorphous material includes an additive in an amount from about 0.001% to about 90% by weight;

said additive is selected from the group consisting of poly-co-dimethylaminopropyl siloxane, poly (ethylene glycol) tetrahydro furfuryl ether, glycerol triacetate and epoxidized soy bean oil;

said polycrystalline material is characterized by a degree of crystallinity and a degree of amorphous regions, said degree of polycrystallinity and said degree of amorphous regions are selected by selecting the composition of said additive and the amount of said additive[.].and

wherein said additive is a plasticizer selected from the group consisting of:

Adipic acid derivatives

Azelaic acid derivatives

Benzoic acid derivatives

Citric acid derivatives

Dimer acid derivatives

Epoxy derivatives

Fumaric acid derivatives

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Isophthalic acid derivatives

Lauric acid derivatives

Linoleic acid derivative

Maleic acid derivative

Mellitates

Sebacic acid derivatives

Stearic acid derivatives

Diethyl succinate

N-Ethyl o,p-toluenesulfonamide

o,p-toluenesulfonamide

Terpentines

Terpentine derivatives

Siloxanes

Polysiloxanes

Ethylene glycols

Polyethylene glycols

Polyesters

Sucrose derivatives

Tartaric acid derivative

Myristic acid derivatives

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aliphatic aromatics Leromoll

chlorinated paraffin (52 wt % Cl)

Ceraclor S-52

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Polysilanes

CLAIM 19 (Original) A structure according to claim 1, wherein the amorphous material in the interstitial regions contains crosslinks.

CLAIM 20 (Original) A structure according to claim 1, wherein the amorphous material in the interstitial regions are deaggregated.

CLAIM 21 (Previously Presented) A structure according to claim 1, wherein the additive is in an amount for about 0.001% to about 90% by weight.

CLAIM 22 (Original) A structure according to claim 1, wherein said structure is selected from the group consisting of an electrostatic discharge layer, is a wire, is a solder, is an electromagnetic interference shield, is a semiconductor device, and a corrosion protection coating.

CLAIM 23 (Previously Presented) A structure according to claim 1, wherein said amorphous regions have crystalline order.

CLAIM 24 (Previously Presented) A structure according to claim 1, wherein said additive has a different material composition from said polycrystalline material.